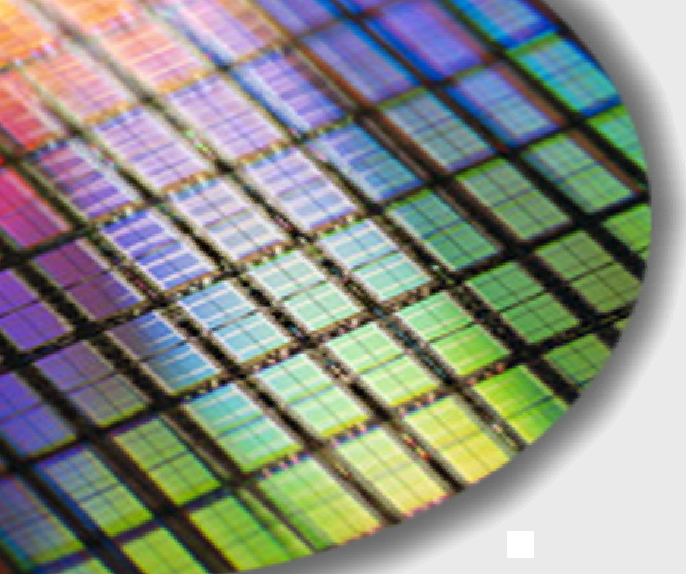
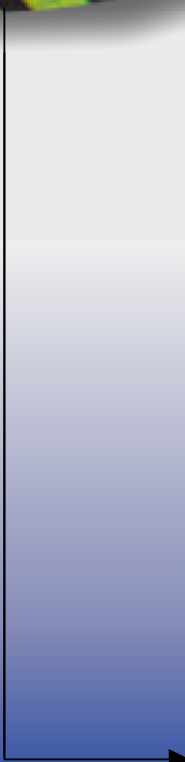




■

AD9860 and AD9862

April 24, 2002



The World Leader in High-Performance Signal Processing Solutions

AD9860/2 MxFE™ for Broadband Communications

AD9860/2 FEATURES

A Versatile Mixed Signal Front-End Processor with Dual Converter Receive and Dual Converter Transmit Paths

Receive path includes Dual 10-/12-Bit, 64 MSPS

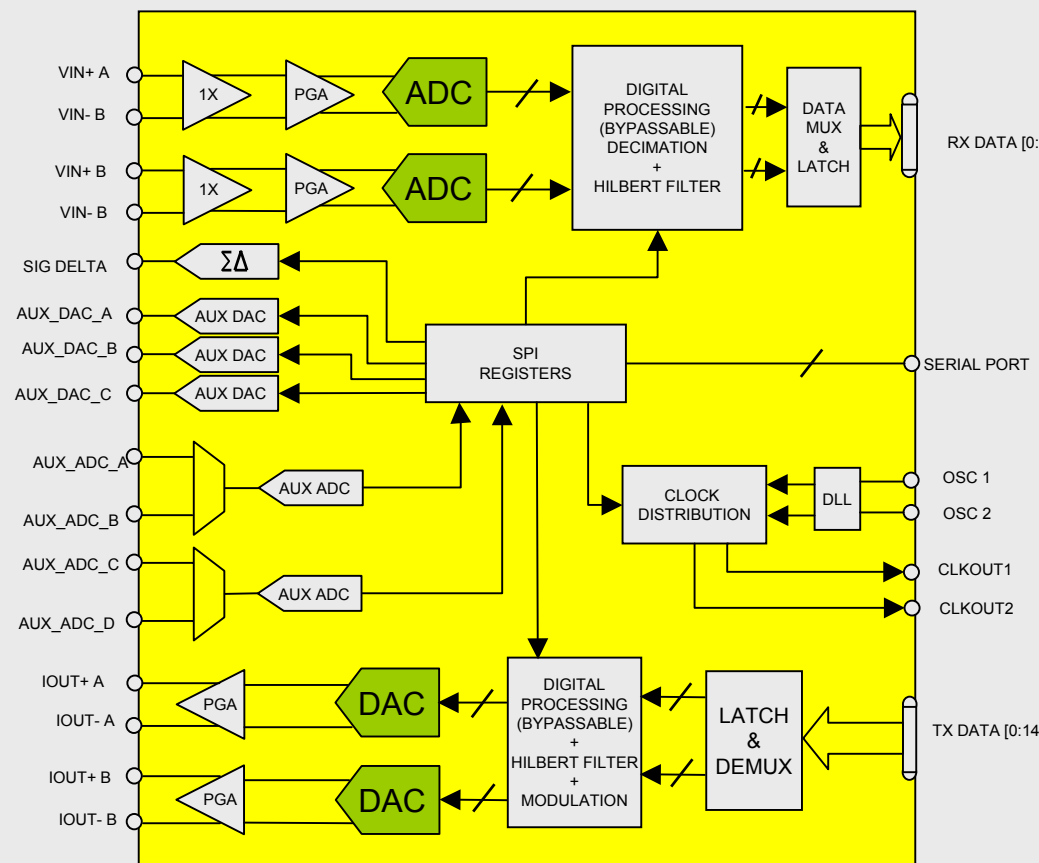
Sampling A/D Converters with Internal or External Independent References, Input Buffers, Programmable Gain Amplifier (PGA), Low-Pass Decimation Filters and a Digital Hilbert Block

Transmit path includes Dual 12-/14-bit, 128 MSPS

D/A Converters with Programmable Full Scale Output Current, Channel independent Fine Gain and Offset Control, Digital Hilbert and Interpolation Filters, Digital Tunable Real or Complex Up-Converters

Internal Clock Distribution Block including a Delay-Locked Loop based clock multiplier and Timing Generation circuitry allow for single crystal or reference clock operation

Programmable Output Clocks, SPI compliant port, two Programmable Sigma Delta Outputs, four Auxiliary Analog outputs and four Auxiliary ADC inputs

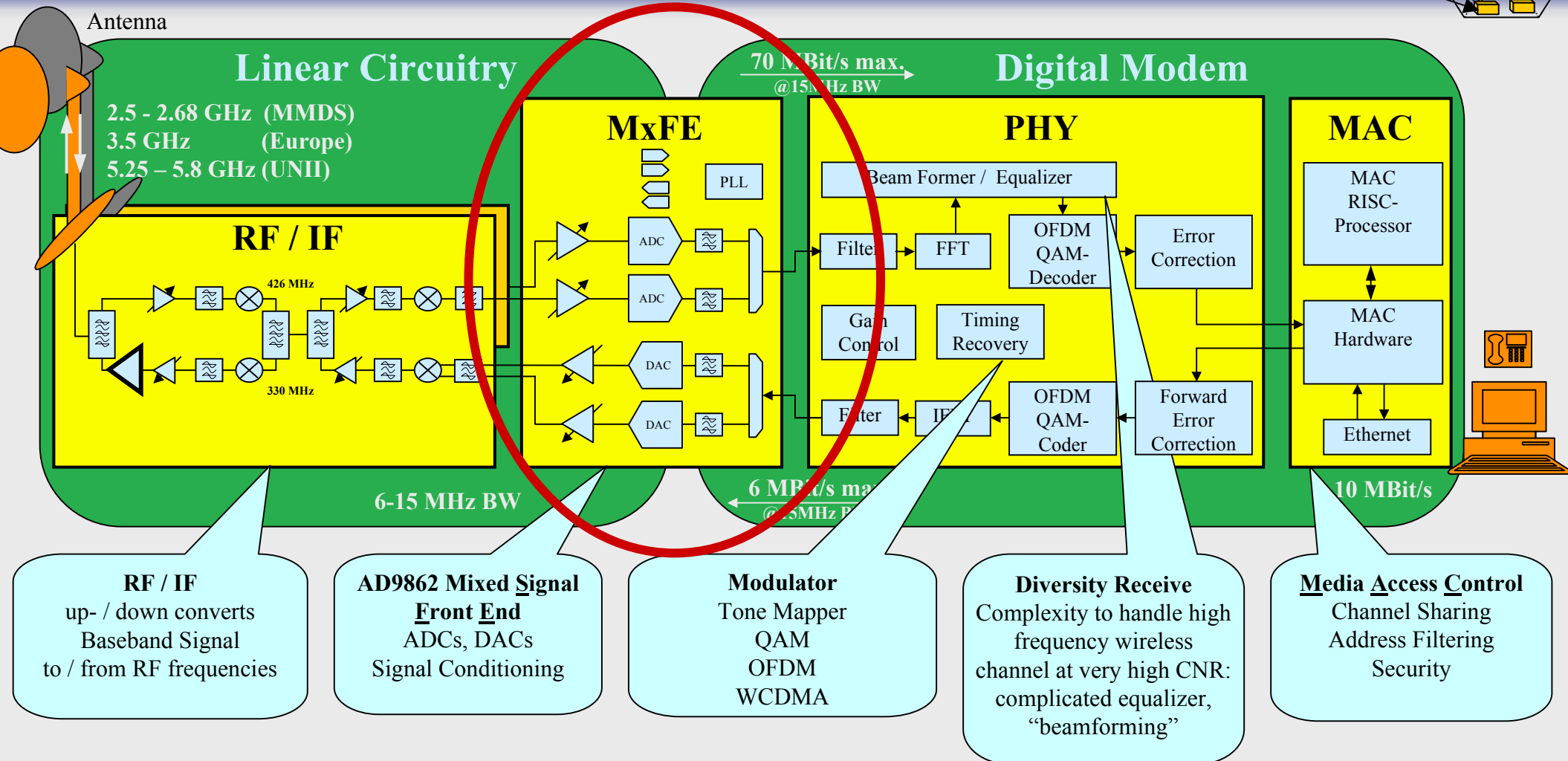
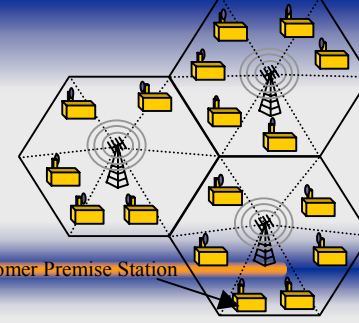


AD9860/62 Dual Channel Mixed Signal Front End (MxFE)

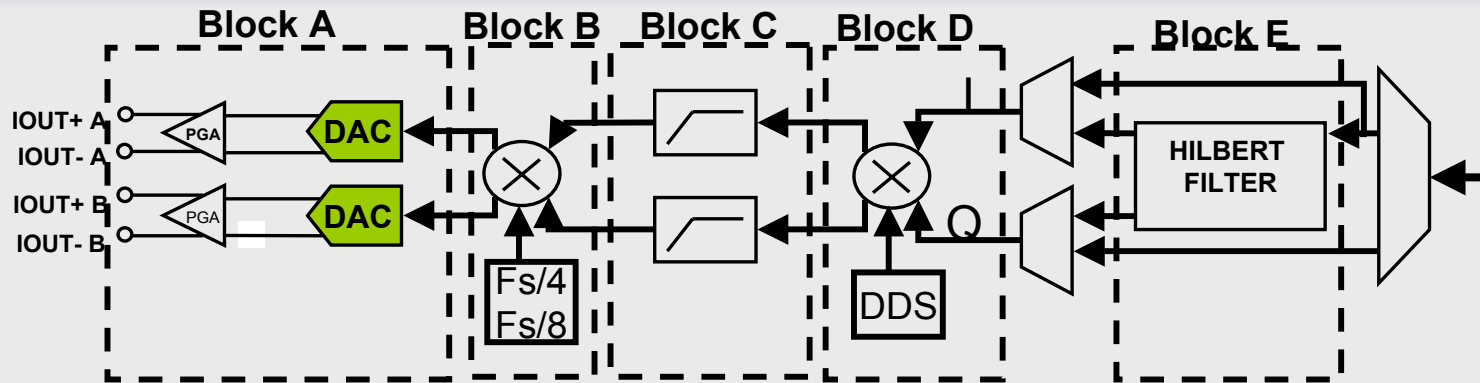
*Targeted at Broadband Wireless and other High Performance
Broadband Modem Applications*

- ◆ **Dual 10/12-bit 64 MSPS ADC and Dual 12/14-bit 128MSPS DAC with 1X, 2X or 4X Interpolation Integrated on a single IC**
- ◆ **Tx Signal Path accepts and processes real or I&Q signals**
 - ◆ Digital Hilbert filter facilitates an image rejection architecture when only real data is available
 - ◆ $F_s/4$ and $F_s/8$ Digital Real or Complex Modulator
 - ◆ Fine Complex Modulator with a 24 bit controlled Numerically Controlled Oscillator
- ◆ **Supports Transmit LO suppression techniques with Independent Offset Control and Single Sideband (SSB) architectures using Independent Fine Gain Control to compensate for System offsets**
- ◆ **Rx Signal Path supports diversity or I&Q demodulation applications**
 - ◆ Digital Decimation Filter can improve receive path performance
 - ◆ Hilbert Filter supports Receive Image Reject Architecture
- ◆ **Versatile Clock Interface, Low Phase Noise Internal DLL Clock Multiplier**
- ◆ **Programmable registers accessed via SPI compliant Port**

AD9862: Broadband Wireless Access Modem App.

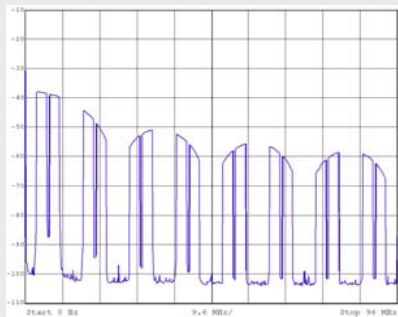


AD9860/2 MxFE™ Transmit Path



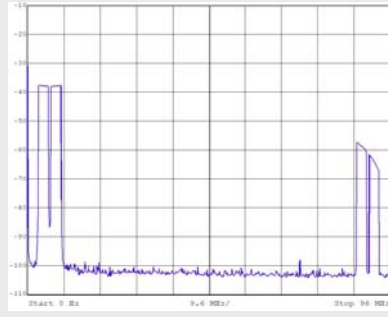
DAC output of OFDM signal using various AD9862 digital processing features: 1.) 0 to 96 MHz spectrum of “Real” output, 2.) with 4x Interpolation, Block C, 3.) with $F_s/4$ Up-conversion, Block B, 4.) with Hilbert Filter, Block E, enabled 5.) Fine Tuned Modulation, Block D, enabled shifted by -6MHz

Fig. 1



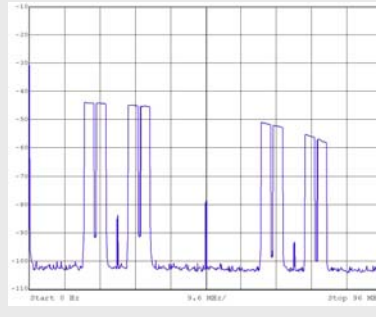
Block A

Fig. 2



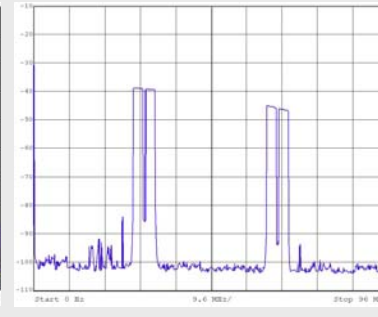
Block A+C

Fig. 3



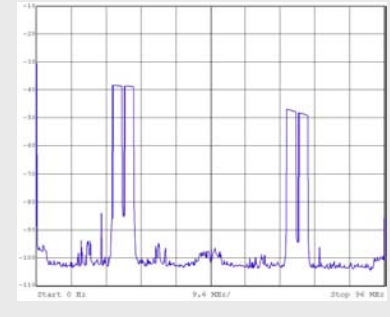
Block A+B+C

Fig. 4



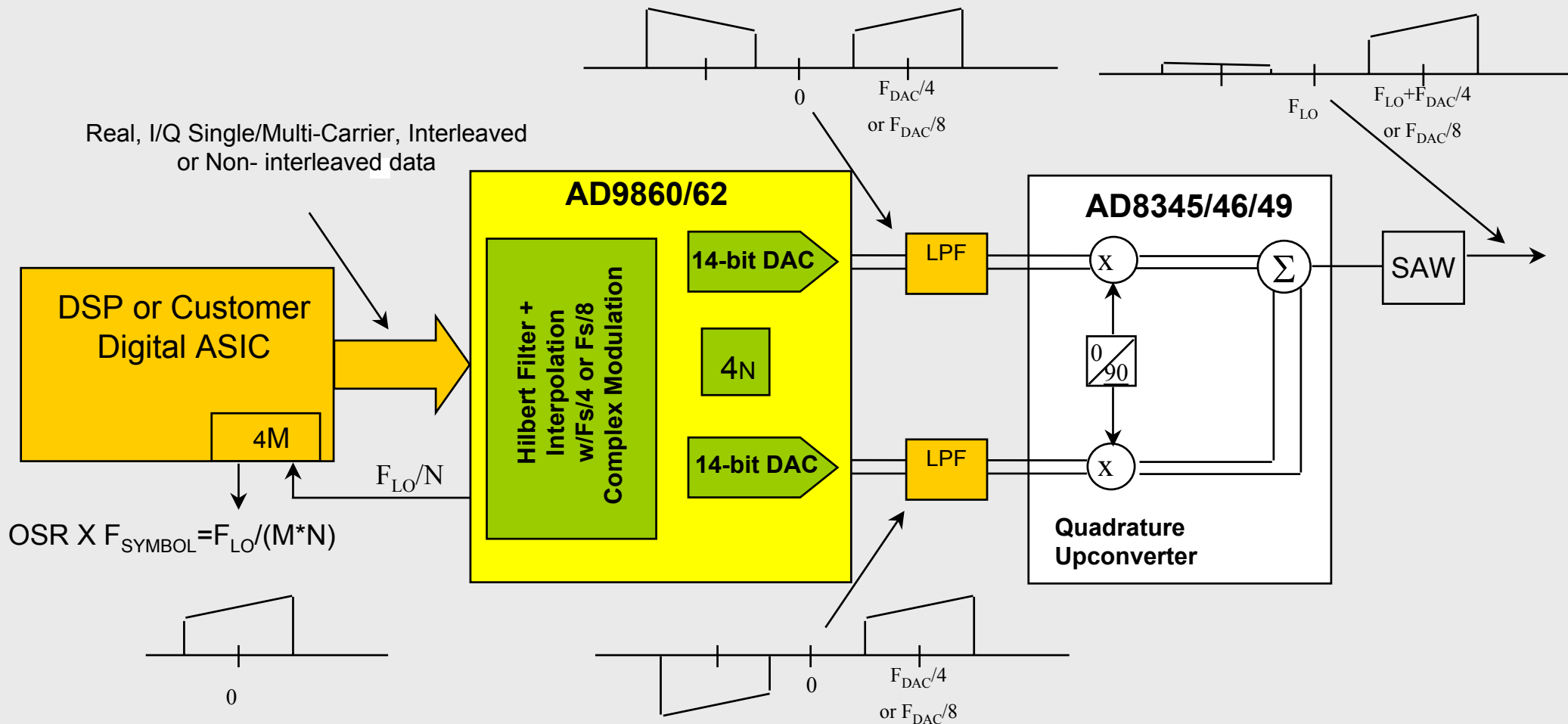
Block A+B+C+E

Fig. 5

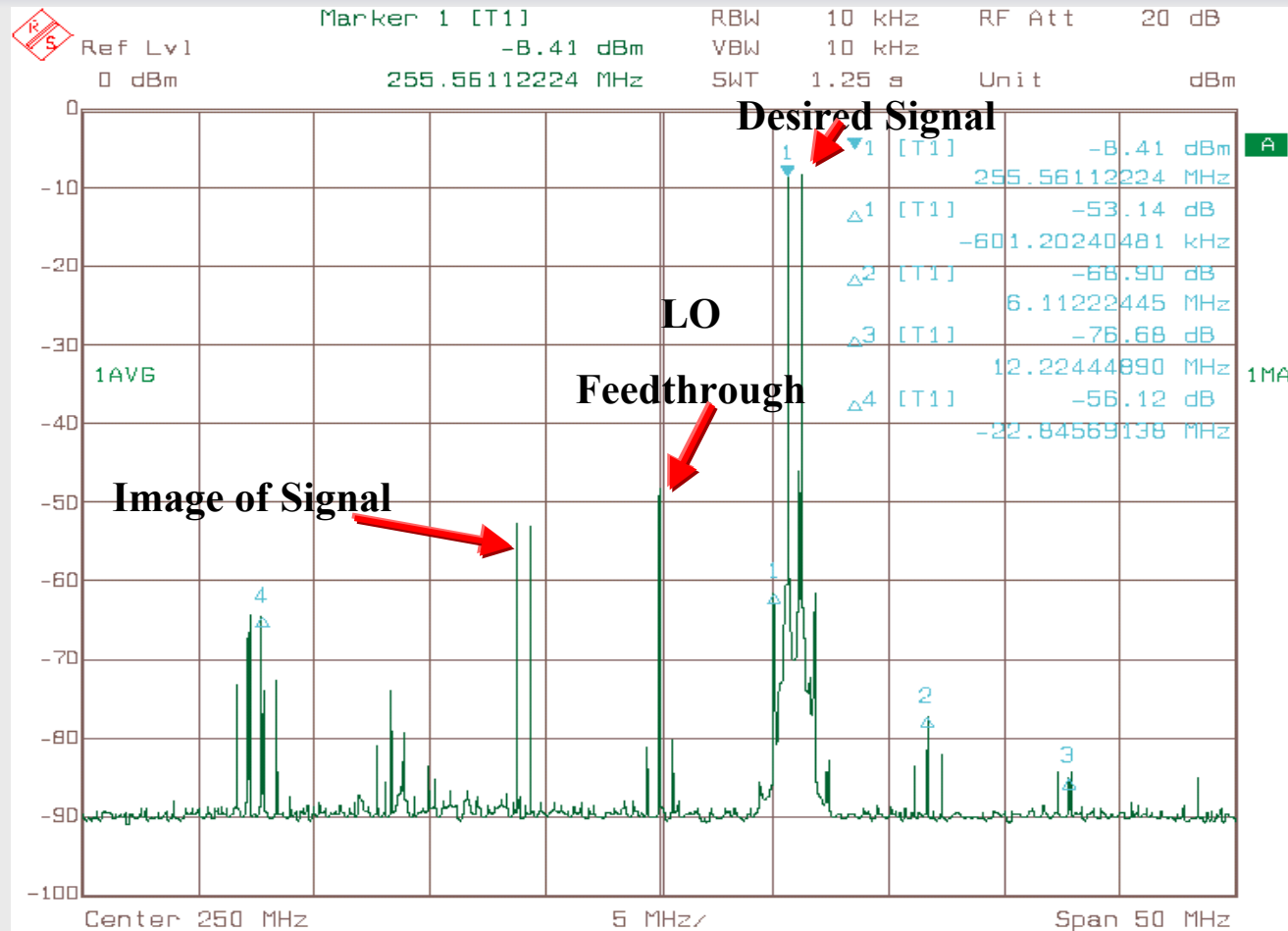


Block A+B+C+D+E

Tx Path Image-Rejection for Single or Multi-Carrier Applications

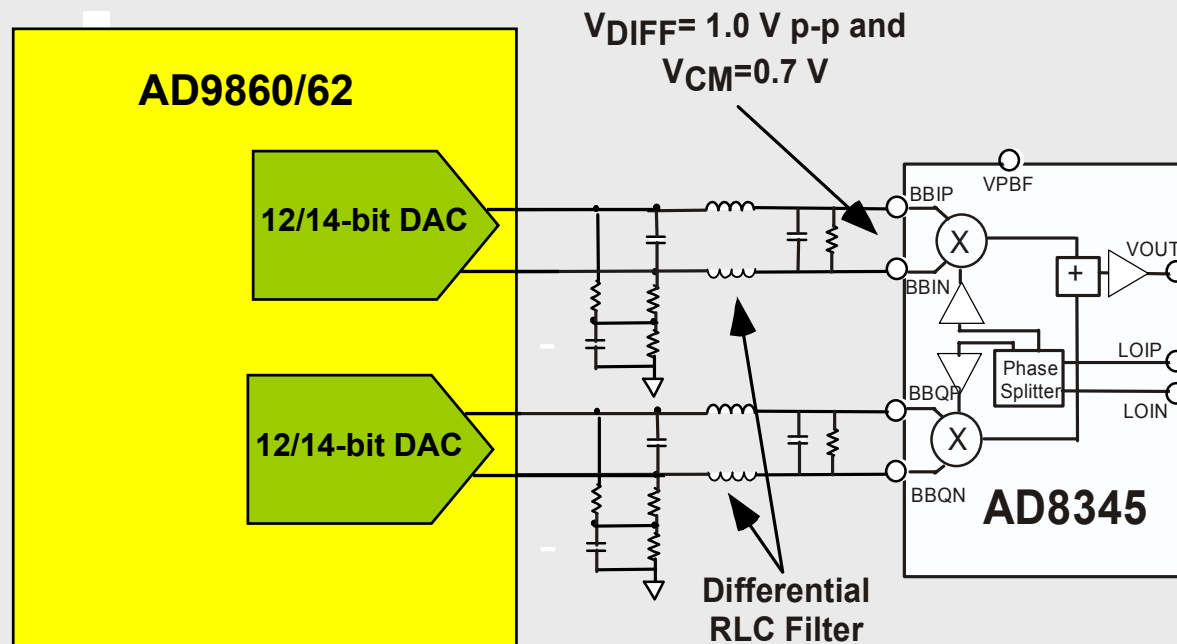


Tx Path Configured for Image-Rejection Applications



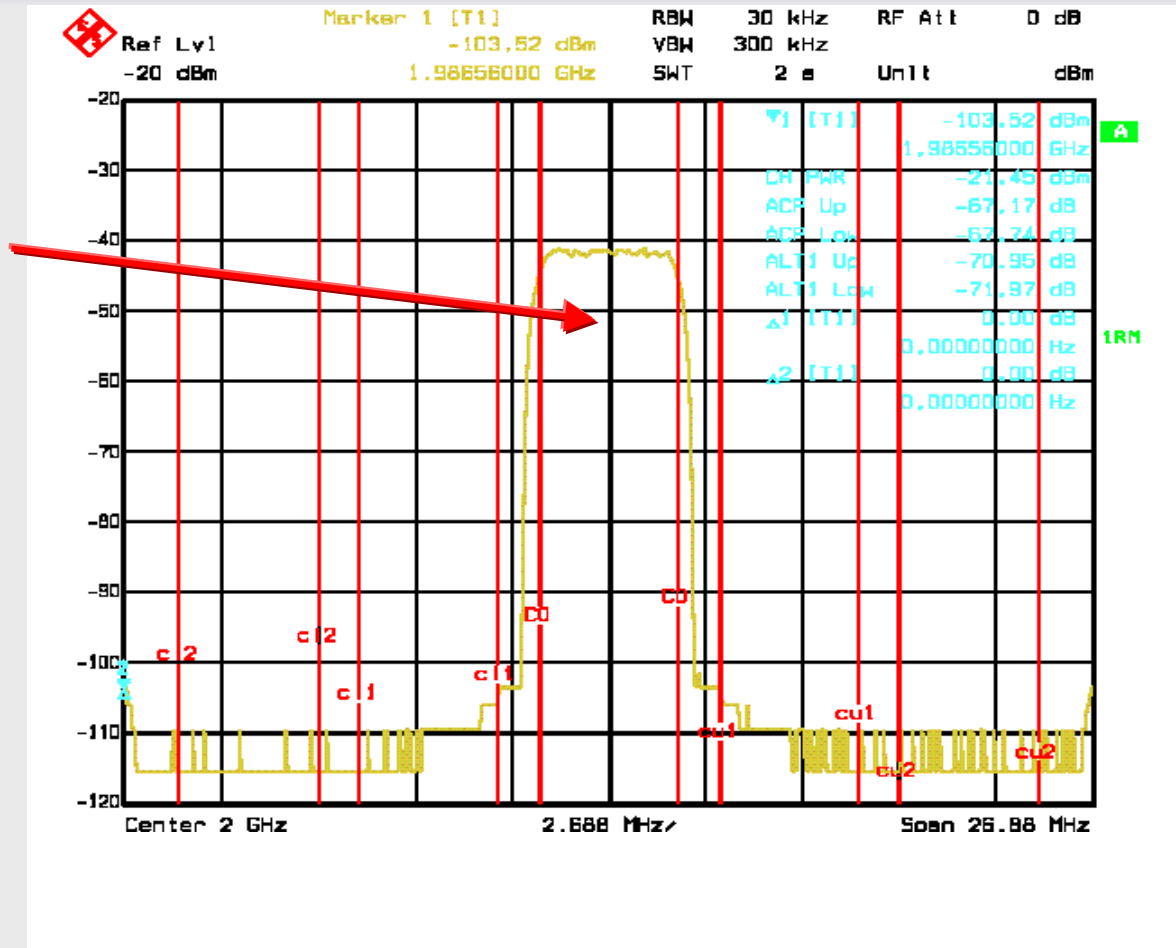
Simple Analog Interface Between TxDAC's and ADI Quadrature Modulators

- ◆ No Active DC Level Shifting Components Required!!!

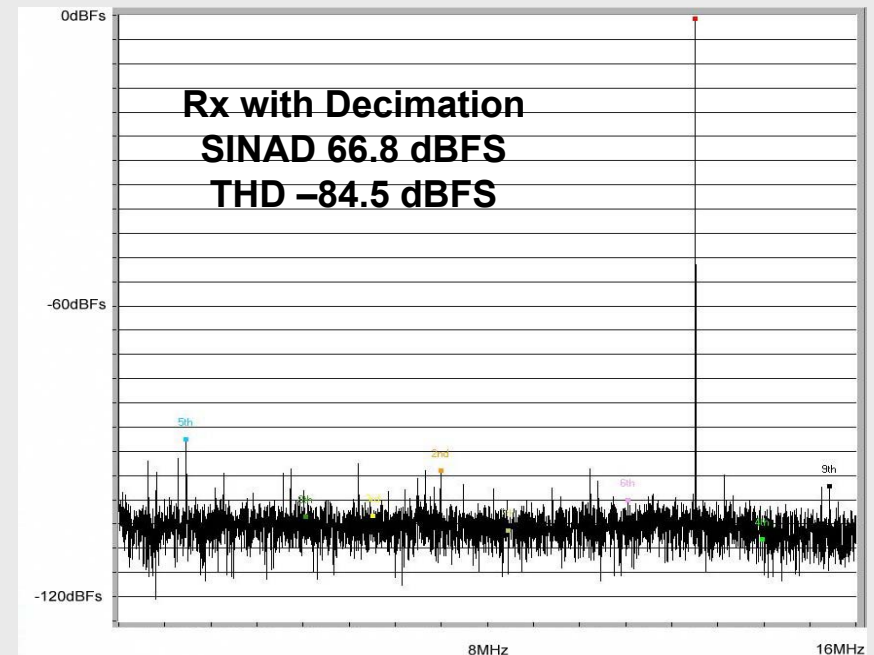
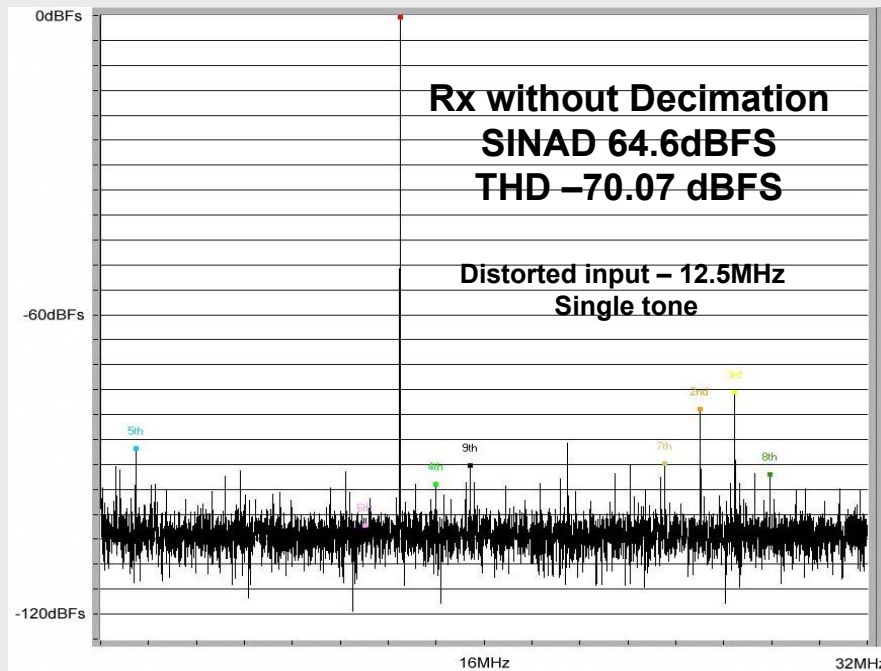
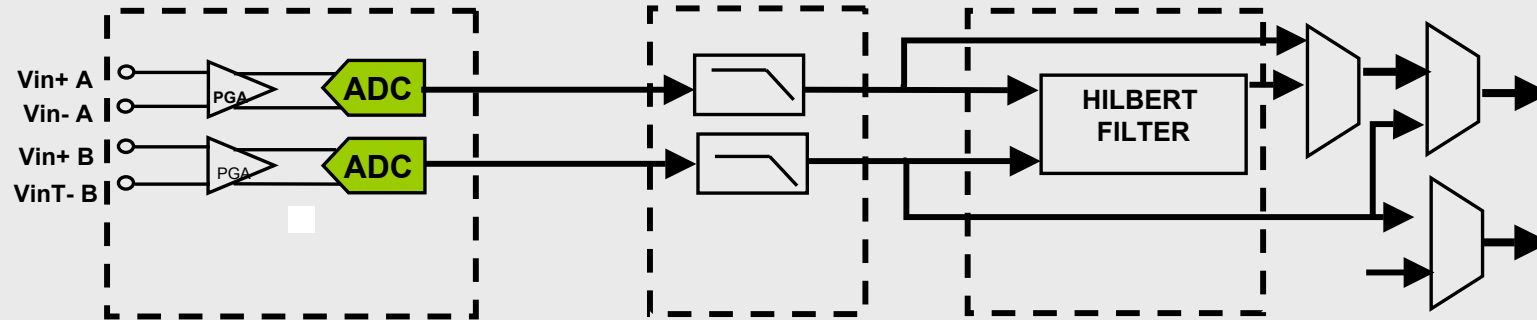


Direct Conversion Possible Using AD8349 Quadrature Modulator

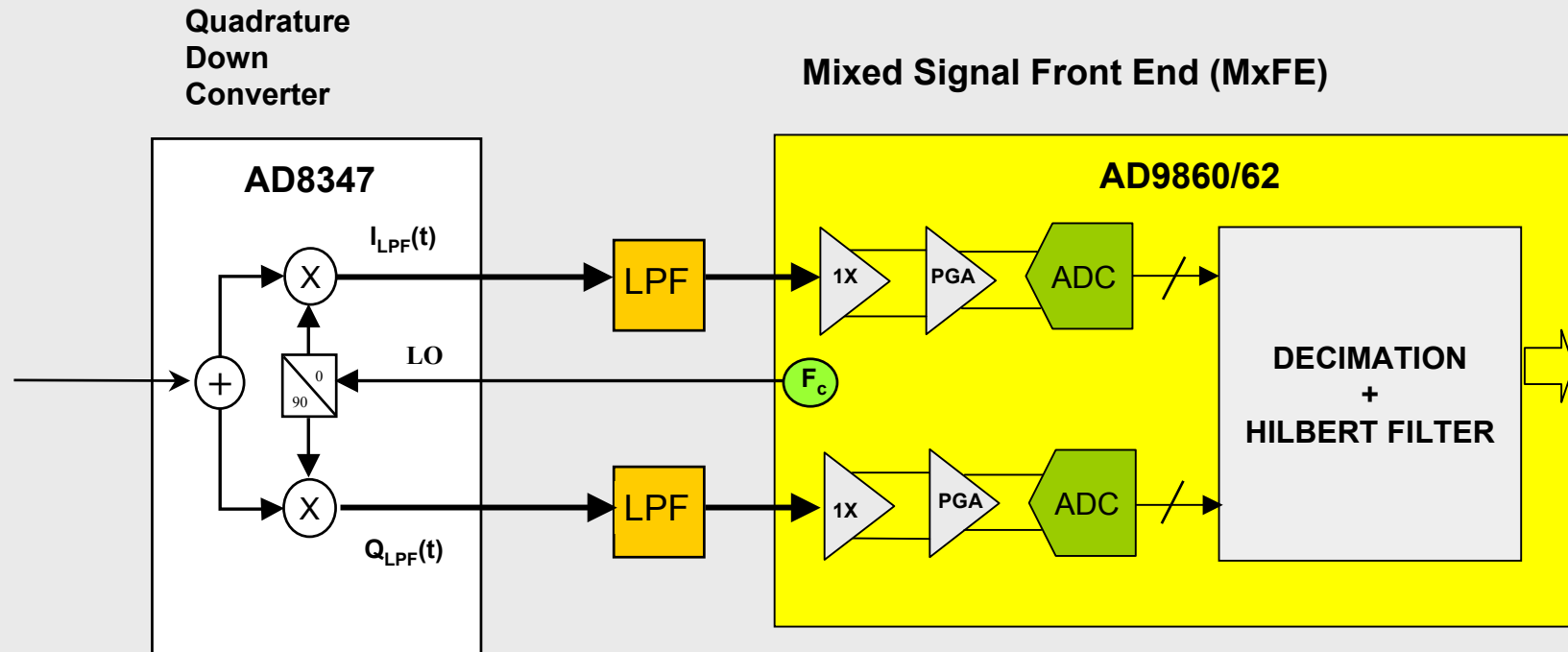
Single Carrier
WCDMA
Signal Achieves
67 dB ACLR



AD9860/2 MxFE™ Receive Path



Supports Baseband I/Q or Image Rejection Down Conversion Receive Architectures



Dual Channel Direct IF Receive Architecture

